



# Instructions

Scrolling through a two-column document on-screen from the bottom of one column to the top of the next, and so on, can get very tedious. Fortunately, "column threading" is automatic with this software. Here are the basic tools and techniques that you need to know to efficiently navigate through the columns in this document ...



1. Click on the hand tool in the button bar. 
2. Whenever the hand cursor is positioned over a column, the cursor changes to the "read article cursor",  and "Read Article" appears in the status bar to indicate that this text is part of an "article". *An article is a collection of columns selected by the editor that comprise one subject, like one of the articles on the front page of a newspaper. Each first-level section (1.1, 1.2, 1.3...) of the NTIA Manual has been defined as a separate article.* Click any part of the article to start reading at that point, or control-click to start at the beginning of the article. The cursor now changes to the follow-article cursor, and "Follow Article" appears in the status bar.



3. To page down, simply click the mouse, or use the scrollbar, or press the PageDown key. *You can keep track of where you are on the page if you're using the thumbnails-and-page view. In this view a selection rectangle moves over a thumbnail of the page as you scroll through the columns in the page view window.*



4. You can continue to click until you reach the end of the article. At the end of the article, the cursor changes to the end-article cursor, and "End Article" appears in the status bar. Click again to return to the page view displayed before you started reading the article. Click the fit page button.


5. If you want to exit before the end of the article...

- select any navigation method (but not Enter or Return)
- Go to another article or page
- Hold down Shift + Ctrl and click.




6. You can also select which article (NTIA Manual Section) to view by choosing “Articles...” from the View menu, and then selecting the article you want from the dialog box that appears. *You can keep* this dialog box displayed so you can go from one article to another, or better yet, use the bookmarks method described in #7 below.

7. The **best way** to select which article (NTIA Manual Section) to view is to switch to the “Bookmarks-and-Page” view, click  on the section name bookmark, **click with the hand cursor on the page**, then navigate with the hand tool as described in #1-5 above. Links to all of the sections are provided — as well as links to tables, figures, endnotes, and even these instructions.

8. To select text within a column, click the text selection tool, hold down the Control key, and drag to select the text you want to copy. 

## CHAPTER 2

**Telecommunication Policy****2.1 OBJECTIVES FOR THE USE OF THE RADIO SPECTRUM APPLYING TO AGENCIES AND ESTABLISHMENTS OF THE FEDERAL GOVERNMENT**

 The United States is vitally dependent upon the use of the radio spectrum to carry out national policies and achieve national goals. Use of the spectrum is vital to the security and welfare of the Nation and to the conduct of its foreign affairs. This use exerts a powerful influence upon our everyday lives, in countless ways, annually contributing significantly to the Nation's growth and economy.

The radio spectrum is a limited natural resource which is accessible to all nations. It is imperative that we develop and administer our use of this resource wisely so as to maintain a free democratic society and to stimulate the healthy growth of the Nation, while ensuring its availability to serve future requirements in the best interest of the Nation.

Therefore, consistent with our international treaty obligations and with due regard for the rights of other nations, the national objectives for the use of the radio spectrum are to make effective, efficient, and prudent use of the spectrum in the best interest of the Nation, with care to conserve it for uses where other means of communication are not available or feasible. Specifically, in support of national policies and the achievement of national goals, the primary objectives are:

- (a) to enhance the conduct of foreign affairs;
- (b) to serve the national security and defense;
- (c) to safeguard life and property;
- (d) to support crime prevention and law enforcement;
- (e) to support the national and international transportation systems;
- (f) to foster conservation of natural resources;
- (g) to provide for the national and international dissemination of educational, general, and public interest information and entertainment;
- (h) to make available rapid, efficient, nationwide, and worldwide radiocommunication services;

- (i) to promote scientific research, development, and exploration;
- (j) to stimulate social and economic progress; and
- (k) in summary, to improve the well being of man.

The following areas of interest are associated with the national objectives listed above:

- o Agriculture
- o Amateur (emergency preparedness, self-training and technical investigation)
- o Commerce
- o Computers and data processing
- o Consumer expenditures and savings
- o Education
- o Entertainment (Broadcasting)
- o Health
- o International (AID, conduct of Foreign Affairs and information exchange)
- o Natural resources (including pollution abatement)
- o National Security and Defense
- o Oceanography
- o Public Safety
- o Research and Development
- o Outer Space
- o Social Welfare
- o Transportation (other than urban areas)
- o Urbanization (housing, transportation, and telecommunications)

These areas of interest are identified to assist in the frequency management process and are not intended to be all inclusive. Priorities among these areas of interest are normally determined on a case-by-case basis and are dependent upon many factors, including past and foreseen political and administrative decisions.

## 2.2 FORMULATION OF TELECOMMUNICATIONS POLICY

The formulation and enunciation of national telecommunication policies designed to ensure achievement of the national objectives is an essential element of the role of the Federal Government. Telecommunication policies are made by the Congress, by the Court, by the President and the Assistant Secretary of Commerce for Communications and Information with respect to the agencies and establishments of the Federal Government, and by the Federal Communications Commission for the public. Policy is made through treaties to which the United States adheres with the advice and consent of the Senate, through executive agreements, by executive departments and agencies in the discharge of their telecommunication responsibilities, and by custom and precedent. These policies may be separated into three categories: National Telecommunication Policy; Telecommunication Policy applying to the agencies and establishments of the Federal Government; and Federal Communications Commission Telecommunication Policy.

The Congress, in the Communications Act of 1934, provided for the regulation of interstate and foreign commerce in communication by wire and radio "so as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service, with adequate facilities at reasonable charges, for the purpose of the national defense, for the purpose of promoting safety of life and property through the use of wire and radio communication," and created the Federal Communications Commission to execute and enforce the provisions of that Act. Sections 301 and 303 of the Act set forth the general powers of the Commission to regulate radio stations, and stipulate that such stations cannot be operated except under and in accordance with the Act and with a license granted under the provisions of the Act. The Congress, by Section 305 of the Act, excluded "Radio stations belonging to and operated by the United States" from the provisions of Sections 301 and 303 of the Act. It provided that all such stations use such frequencies as shall be assigned by the President.

The Congress, in the Communications Satellite Act of 1962, declared: "...it is the policy of the United

States to establish, in conjunction and in cooperation with other countries, as expeditiously as practicable a commercial communications satellite system, as part of an improved global communications network, which will be responsive to public needs and national objectives, which will serve the communication needs of the United States and other countries, and which will contribute to world peace and understanding. ... United States participation in the global system shall be in the form of a private corporation, subject to appropriate governmental regulation. ... It is not the intent of Congress by this Act to preclude the use of the communications satellite system for domestic communication services where consistent with the provisions of this Act nor to preclude the creation of additional communications satellite systems, if required to meet unique governmental needs or if otherwise required in the national interest." The Congress provided in Section 201 of the Act: "In order to achieve the objectives and to carry out the purposes of this Act-(a) the President shall-... (7) so exercise his authority as to help attain coordinated and efficient use of the electromagnetic spectrum and the technical compatibility of the system with existing communications facilities both in the United States and abroad...."

The President by Reorganization Plan No. 1 of 1977 and Executive Order 12046 of March 26, 1978, established the Assistant Secretary of Commerce for Communications and Information and delegated to the Secretary of Commerce the authority to:

1. Assign frequencies to Government radio stations and classes of stations, and amend, revoke or modify such assignments;
2. Authorize a foreign government to construct and operate a radio station at the seat of the U.S. Government;
3. Help attain coordinated and efficient use of the electromagnetic spectrum and the technical compatibility of the communications satellite system with existing communications facilities both in the United States and abroad;
4. Develop and set forth, in coordination with the Secretary of State and other interested agencies, plans, policies and programs relating to international telecommunication issues, conferences and negotiations;
5. Coordinate preparations for United States

participation in international telecommunication conferences;

6. Coordinate policies and standards for spectrum use and related emergency readiness activities with the Executive Branch;

7. Ensure that the Executive Branch views on telecommunication matters are effectively presented to the Federal Communications Commission;

8. Establish policies concerning the use of the spectrum by Federal Government agencies; and

9. Develop, in coordination with the Federal Communications Commission, a comprehensive long-range plan for improved management of the spectrum.

## **2.3 TELECOMMUNICATIONS POLICY APPLYING TO AGENCIES AND ESTABLISHMENTS OF THE FEDERAL GOVERNMENT**

The following policies have been established regarding the use of telecommunications by the agencies and establishments of the Federal Government:

### **2.3.1 General**

#### **Telecommunication Development and Regulation**

The Government shall encourage the development and regulate the use of radio and wire communications subject to its control so as to meet the needs of national security, safety of life and property, international relations, and the business, social, educational, and political life of the Nation.

#### **International Telecommunication Regulation**

The Government considers the International Telecommunication Union the principal competent and appropriate international organization for the purpose of formulating international regulations on telecommunication matters.

The Government recognizes that other international bodies, such as the International Civil Aviation Organization, Intergovernmental Maritime

Consultative Organization and the World Meteorological Organization also provide appropriate international organizations for considering specialized telecommunication matters.

The United States shall be appropriately represented at international conferences dealing with telecommunications when such conferences appear to involve its national interests.

The Government shall foster and encourage the participation, for the purpose of coordination and provision of advice and information, of experts from its commercial communication, scientific, and educational communities as advisers in the preparation for and participation in international telecommunication conferences, in consonance with national policy and security considerations.

### **Operating Capability of Industry**

The Government regards the operating capability of the privately-owned telecommunication industry as a vital national asset and shall encourage and promote the development of that industry in consonance with other national policy and security considerations.

### **2.3.2 Functions to be Achieved**

#### **National Defense**

The United States in time of war or national emergency, as proclaimed by the President, shall have available to the Government the total telecommunication resources of the Nation for utilization with due regard to the extent of the war or emergency and to the continuing operation of services considered to be essential or desirable for the welfare and interest of the United States during such a time.

On a continuing and current basis, all common carriers shall be encouraged and assisted in planning and preparing for their immediate readiness to meet emergency or war conditions so that telecommunications responsiveness to emergency war requirements can be instantaneous with the occurrence of such conditions.

In advance of war or national emergency, all desirable and possible measures and procedures necessary for use during emergency or war conditions will be developed and made available as needed so

that they can be effected concurrently with the onset or threatened onset of emergency war conditions.

### **Safety at Sea**

The Government shall aggressively foster the development, investigation, selection, and standardization of a worldwide system of radio and electronic aids for marine navigation and communication, since the national security, the Nation's sea commerce, and the assurance of adequate safety of life and property at sea for ships of all nations require such an efficient, integrated, and standardized system.

### **Safety in the Air**

The Government shall aggressively foster the development, investigation, selection, and standardization of a worldwide system of radio and electronic aids for air navigation and communication, since the national security, the Nation's air commerce, and the assurance of adequate safety of life and property in flight require such an efficient, integrated, and standardized system.

### **Protection of Life, Property, and National Resources**

The Government shall promote the development and use of radio for the protection of the lives and property of its citizens and of other national resources where other means of communication are not appropriate or available.

### **Research**

The Government shall foster such research and development activities in the telecommunication field as will permit and encourage the most beneficial use of the radio spectrum in the national interest.

### **Promotion of Efficiency and Economy of Government Operations**

The Government shall promote the development and use of radio to improve the efficiency and economy of Government operations where other means of

communication are not appropriate or available.

### **2.3.3 Government Use of Commercial Telecommunication Service**

The Federal Government places heavy reliance on the private sector in providing telecommunication service for its own use. This means that all functions normally associated with providing the service shall be performed by the private sector. These functions include design, engineering, system management and operation, maintenance, and logistical support.

In order to emphasize the Government's proper role as a user, any proposal designed to provide needed telecommunication service, which requires the Government to perform any of the "provider" functions, such as those listed above, shall be adopted only if commercial service is:

a) not available to the user during the time needed;

b) not adequate from either a technical or operational standpoint; or c) significantly more costly.

A non-commercial service approach is acceptable if such an approach will result in significant savings over an otherwise acceptable commercial service offering. To be considered significant the savings must exceed ten percent of the cost of the commercial service. The cost estimate of the non-commercial approach must include, as a minimum, all of the factors called out by OMB Circular A-76. If the proposed approach involves heavy investment, rapid obsolescence, or uncertain requirements, the minimum savings threshold should be increased to reflect these factors.

The Government shall establish separate communication satellite systems only when they are required to meet unique governmental needs, or are otherwise required in the national interest.

### **2.3.4 Use of Space Radiocommunication Techniques in the Aeronautical Services**

The Government shall promote the use of space radiocommunication techniques in the aeronautical services when economy of operation, improved service, and the more effective use of the radio spectrum will thereby result. The Government shall promote the use of frequencies in the band 1535-1660 MHz for the aeronautical mobile (R) service for international civil aviation operations.

### **2.3.5 Role of Leadership by the Government**

The Government shall exercise leadership in the application of technological advances of operational procedures that will result in more efficient and effective use of the radio spectrum. Periodically, it shall measure the status of current technical and operational capabilities to determine necessary changes in technical standards, allocations, or assignments which should be effected.

### **2.3.6 Radio Spectrum Administration**

The Government regards the radio frequency spectrum as a world resource in the public domain; consequently it shall adopt policies and measures to insure that this resource is used in the best interest of this Nation, but with high regard to the needs and rights of other nations.

The supervision and administration of the Government use of the radio frequency spectrum shall have the objective of assuring that such use is efficient, effective, and prudent.

The Government considers the radio frequency spectrum to be a vital national resource. Any rights of United States users to operate on any radio frequency are rights held by the United States as a whole. Such rights may be transferred by this Government from one user to another, as required in the overall national interest.

The Government considers that the basic guide to follow in the normal assignment of radio frequencies for transmission purposes is the avoidance of harmful interference and the use of frequencies in a manner which permits and encourages the most beneficial use

of the radio frequency spectrum in the national interest.

Within the jurisdiction of the United States Government, use of the radio frequency spectrum for radio transmissions for telecommunications or for other purposes shall be made by United States Government stations only as authorized by the Assistant Secretary.

In view of the limitations of the usable radio frequency spectrum, and to insure the best possible return from the use thereof, the Government in time of peace shall require all users to:

a) justify any except an emergency request for radio frequencies prior to the assignment or use of such frequencies; b) confirm periodically the justification of continued use; c) employ up-to-date spectrum conserving techniques as a matter of normal procedure; and d) assure the ability to discontinue the electronic functioning of any emission system including satellites when required in the interest of communication efficiency and effectiveness.

In recognition of the congestion of that portion of the radio frequency spectrum which is suitable for long-distance communication, only in exceptional circumstances shall frequencies below 30 MHz be assigned in the domestic fixed service.

Normally, radio frequencies shall be assigned in the following order:

Frequencies used primarily, predominantly, and directly for national security and defense, for purposes which are vital to the safety of the Nation.

Frequencies used primarily, predominantly, and directly to safeguard life and property in conditions of distress.

Frequencies used primarily, predominantly, and directly to safeguard life and property in other than conditions of distress where other means of communication are not available.

Frequencies used in scientific research and those used in services that have no adequate means of rapid communication, when such use is considered to be necessary or desirable in the national interest.

Frequencies used for all other purposes, the assignment of which must be judged upon the merits of the intended use.

### **2.3.7 Spurious Emissions**



In principle, spurious emissions from stations of one radio service shall not cause harmful interference to stations of the same or another radio service within the recognized service areas of the latter stations, whether operated in the same or different frequency bands.

Providing appropriate spectrum standards in Chapter 5 are met, an existing station is recognized as having priority over a new or modified station. Nevertheless engineering solutions to mitigate interference may require the cooperation of all parties involved in the application of reasonable and practicable measures to avoid causing or being susceptible to harmful interference.

### 2.3.8 Ionosphere Sounders

Ionosphere sounders have demonstrated their value in providing data for:

- (a) increasing scientific knowledge of the Earth's atmosphere;
- (b) real-time evaluation of propagation conditions to increase the reliability of high frequency communications;
- (c) real-time monitoring of upper atmosphere phenomena;
- (d) improving utilization of the radio spectrum;
- (e) predicting disturbed ionosphere conditions;
- and
- (f) enhancing survival communications, particularly in a nuclear environment.

Since uncontrolled growth in the number of ionosphere sounder transmitters could result in mutual, harmful interference among them and could be a potential source of harmful interference to established radio services, radio frequency support for ionosphere sounder transmitters shall be effected only in accordance with the provisions of Sections 8.2.21 and 8.2.22.

### 2.3.9 Safety Service

Radio Regulation 56 defines a safety service as “any radiocommunication service used permanently or temporarily for the safeguarding of human life and property”. The intent of RR56 is that the safety service connotation should be applied to individual uses (assignments) of the radio frequency spectrum,

irrespective of the radio service normally applied. This is a very important point since assignments which do entail the providing of a safety-of-life function require an appropriate degree of protection. It does not mean that such assignments have any special status which would in any way alter the normal rules applied with respect to primary, permitted and secondary allocations, noting that priority of communications are otherwise provided in the Radio Regulations (Articles 51 and 61).

From a spectrum management point of view, the domestic and international policies regarding safety service are consistent. Accordingly, the following guidance is applicable:

(a) The protection and status afforded to the categories of Services and allocations and to stations in all services is governed, *inter alia*, by Art. 8, Sec. II. ITU Radio Regulations (RR).

(b) request for assistance in the case of harmful interference (RR163) caused to stations of the radionavigation service in a frequency band where the service is allocated under the Table of Frequency Allocations on a secondary basis would be treated by terms of RR420 through 423.

(c) request for assistance in the case of harmful interference (RR163) caused to stations of the radionavigation service in a frequency band where the service is allocated under the Table of Frequency Allocations on a coequal primary basis would be treated in accordance with normal practices based upon which operation was first brought into use unless it can be demonstrated that a “safety-of-life function is being served.” In other words, any radiocommunication service which uses the spectrum for safety purposes may be regarded in that case as a safety service and, in this respect, the appropriate provisions of the Radio Regulations would apply.

### 2.3.10 Use of Spectrum-Conserving Methods for Radio Communication Systems

The Federal Government, in its role of leadership in the application of advanced technology, shall foster the application of spectrum-conserving methods for radio communication systems used by the Federal Government. Spectrum-conserving systems are new or existing systems that make use of innovative designs or unique applications that result in efficient

use of frequency, space and time. Efficient use is a mission-oriented factor that combines the requirements of the mission with available techniques to provide the most effective solution. Federal agencies are encouraged to use spectrum-conserving technologies and methods where they will satisfy agency operational requirements and will enhance service, economy of operation, and the more efficient and effective use of the radio spectrum. However, where spectrum is readily available due to geographic considerations or other factors, or where mission requirements mandate, security, economics, or some technical or system performance criterion may be the determining factor in system selection.

### **Land Mobile Systems**

1. Spectrum-conserving methods that should be considered for land mobile operations include trunked systems, narrowband FM (NBFM), and amplitude compandored single sideband (ACSSB).

a. Trunking is a technique that uses dynamic channel assignment to potentially obtain a higher degree of channel loading and increased spectrum utilization.

b. NBFM is conventional FM with channel spacing of 12.5 kHz or less. It may be capable of interoperation with conventional FM equipment using 25 kHz channel spacing.

c. ACSSB is a single-sideband modulation scheme with a necessary bandwidth of approximately 3.0 kHz, a standardized pilot carrier for synchronization, and amplitude compandoring.

2. The Federal Government shall foster the development of and standards for trunked land mobile

systems used in appropriate bands allocated to the Federal Government.

### **2.3.11 Protection of Classified and Sensitive Unclassified Information**

The National Policy on Telecommunication and Automated Information Systems Security was promulgated by National Security Decision Directive Number 145. It establishes the policy that telecommunication and automated information systems handling classified information shall be secured and those handling sensitive, but unclassified information shall be adequately protected. It charges the heads of Federal Departments and Agencies with achieving and maintaining a secure posture for such systems within their departments or agencies. In implementing this policy, an objective of the supervision and administration of the Government use of the radio frequency spectrum shall be to assure that this use of radio frequency spectrum is also consistent with the objective of assuring the Government use of spectrum is efficient, effective and prudent.

### **2.3.12 Proof of Compliance with FCC Licensing Requirements**

Section 104(e) of the National Telecommunications and Information Administration Organization Act, as amended, requires that NTIA have proof of compliance with FCC licensing requirements for non-government operations of a radio station utilizing a government frequency or utilization of a government radio station for non-government purposes. Federal agencies must include the FCC file number of any non-government entity using government facilities or radio frequencies for non-government purposes in the application for an NTIA frequency assignment.<sup>1</sup>

**Endnotes for Chapter 2**

1. See IRAC Doc. 28420/1-2.2.5.

**(Last page in Chapter 2)**